REMARKS

The Office Action notes that Claims 1-21 are pending in the application. By this response, Claims 1-21 have been cancelled and Claims 22-67 have been added. Support for the new claims can be found throughout the originally filed specification, claims, and drawings; therefore, no new matter has been added. Claims 22-67 are pending.

Specification

The Office Action objects that the application does not contain an abstract of the disclosure. In response, the applicants hereby encloses on a separate sheet an abstract of the disclosure as required by 37 CFR 1.27(b).

Drawings

The Office Action objects that Figures 1 and 2 should be marked "prior art" because only that which is old is illustrated. The applicants hereby enclose marked up copies of Figures 1 and 2, with changes shown in red ink, designating Figures 1 and 2 as "prior art." The examiner's approval of the marked up drawings is respectfully requested.

35 USC § 112 Rejections

Claims 1-20 stand rejected under 35 USC § 112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention.

Specifically, the Office Action objects that in the claims, nanoparticles are separated from microparticles, but that in the specification, a separation occurs at about 10 microns. The Office Action further objects to use of the phrase "of sufficient value" in the claims. Finally, the Office Action objects to the phrase "circulating the gas fluidized

fine particle stream inside the classifier vessel in such a manner as to define flow patterns within the vessel which provide for physical-chemical conditions." New claims 22 through 67 do not contain any of the language to which the Office Action objects and the Applicants respectfully submit that all of the new claims are fully supported by the originally filed specification, claims, and drawings.

For example, new claim 22 defines an apparatus. The Apparatus comprises:

> a settling chamber having a top section and bottom section;
>
> an outlet port positioned on the top section; and
>
> an inlet port positioned on the bottom section; wherein a ratio of height to width of the settling chamber is greater than 0.7.

Support for claim 22 can be found in the specification as follows. The specification describes a settling chamber having a bottom section and a frustoconical top section. (page 6, lines-17-18). An outlet port is located in the top section and an inlet port located in the bottom section. (page 6, lines 17-19). The bottom section has a first diameter of 48 inches. (page 6, line 20). The inlet port has a second diameter and the ratio of the first diameter to the second diameter is approximately 4 to 1. (page 6, lines 20-21) Finally, the ratio of the second diameter to the height of the chamber is approximately 1 to 3.5. (page 7, lines 9-10)

Claim 38 recites a method for utilizing the settling chamber. The method includes the following steps:

> introducing a gas fluidized particle stream through the inlet port at a given volume flow rate;
>
> establishing a gas stream flow pattern within the settling chamber that retards transportation of one group of particles

to the outlet port and facilitates transportation of another group of particles to the outlet port; and

collecting the other size of particles at the outlet port.

Support for Claim 38 can be found throughout the specification. For instance, support for "introducing a gas fluidized particle stream . . . " is described in page 8, line 9; support for "establishing a gas stream flow pattern . . ." is found on page 9, line 3; support for "collecting the other size of particles at the outlet port" is found on page 9, line 1.

New Claim 55 recites a system. The system comprises:

means for introducing a gas fluidized particle stream into a settling chamber;

means for establishing a gas stream flow pattern within the settling chamber that retards transportation of one group of particles to an outlet port and facilitates transportation of another group of particles to the outlet port.

Support for these limitations can be found on page 8, line 9 and page 9, line 3 of the specification.

35 USC § 102 Rejections

Claims 1-4 and 6-9 were rejected under 35 USC § 102(b) as being anticipated by Chase. (U.S. Patent No. 5882530).

Claims 1-4 and 6-9 are now cancelled but the Applicants traverse the above rejections to the extent the examiner applies them to new claims 22-67.

Chase discloses a crossflow filter cyclone apparatus 10. The apparatus has a top portion 11 having an inlet 14 and a bottom portion 16 with an outlet 15. (see Fig. 1). In contrast, independent claim 22 includes "an outlet port positioned on the top section; and an inlet port positioned on the bottom section. . ." To anticipate claim 22, Chase

must disclose all the elements of claim 22 as set forth therein. Chase clearly does not disclose all the elements of claim 22 because the respective locations of the inlet and outlet of Chase 15 are different to what is recited by claim 22.

The Office Action attempts to minimize this distinction by stating that it is inherent that the cyclone apparatus of Chase can be inverted. (Office Action, page 3, section 9) The applicants respectfully disagree and submit that it is anything but inherent that the apparatus of Chase can be inverted. The apparatus disclosed by Chase is not a settling chamber but is rather a modified cyclone that utilizes centrifugal and gravitational forces to filter particles. (column 4, lines 3-7) Therefore, it is vital to the correct functioning of the apparatus that inlet 14 be located above outlet 15. This allows gravitational forces to propel certain particles to outlet 15. If the cyclone were inverted, as the examiner suggests, the cyclone would no longer function because the effect of gravitational force would be negated. Therefore, the ability to invert the cyclone of Chase is not inherent to the reference and the reference actually teaches away from such a modification.

Claims 1-5 and 7-15 are also rejected as being anticipated by *Zelazny, et al.* (U.S. Patent No. 5174455 "Zelazny").

The applicants respectfully submit that Zelazny does not disclose many features recited in the claims. For instance, there is no mention in Zelazny of a ratio of height to width of the settling chamber greater than 0.7, a ratio of the size of the base to the size of the inlet port of approximately 4 to 1, introducing gas fluidized particle streams at a given velocity of 10 to 1,000 scfm, and introducing a gas fluidized particle stream comprising particles having a minimum particle size of approximately .001 micron. The

Examiner asserts that these characteristics are inherent to the Zelazny but provides no explanation as to why these characteristics are inevitable from the disclosure . For example, Zelazny is silent with respect to the height and width of the cyclone disclosed so it can not be inevitable from the disclosure that a ratio of height to width of the settling chamber is greater than 0.7.

Further, Zelazny simply does not disclose "establishing a mainly circulating flow pattern in the bottom section" and "establishing a secondary recirculating flow pattern in the top section" as in the claims. Zelazny is a simple cyclone separator and Applicants are aware of no teaching that would indicate that simple cyclone separators *inherently* form multiple flow patterns. In fact, Fig. 1 of Zelazny would seem to indicate the opposite.

Conclusion

In view of the aforesaid, the applicant respectfully submits that all claims pending herein are in the condition for allowance. Favorable reconsideration is hereby requested.

Respectfully submitted,

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Dated: 9/2/03, 2003

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